UNIVERSITA' DI MESSINA
FACOLTA' DI SCIENZE

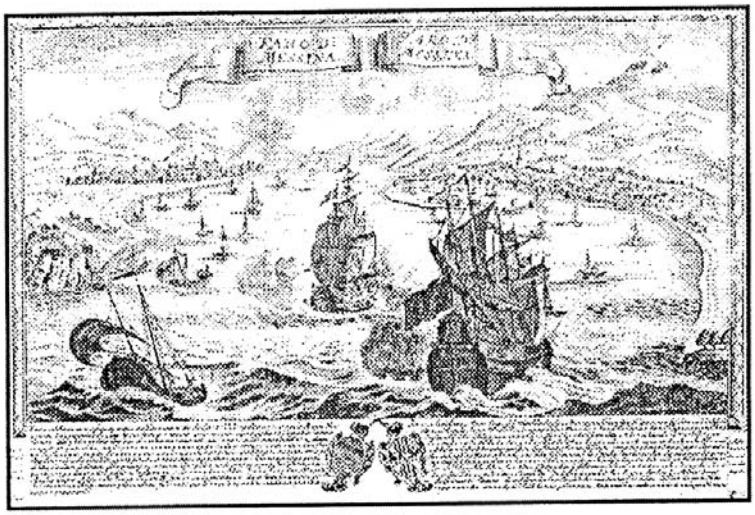
Dipartimento di Chimica Inorganica, Analititca
e Struttura Molecolare

Società Chimica Italiana
visione di Chimica Inorganica

Atti Accademia Peloritana dei Pericolanti
Classe I di Scienze Fisiche
Matematiche e Naturali

WORKSHOP ON PLATINUM CHEMISTRY

ABSTRACTS



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METAL-METAL BONDS IN FIVE-COORDINATE PLATINUM(II) COMPLEXES

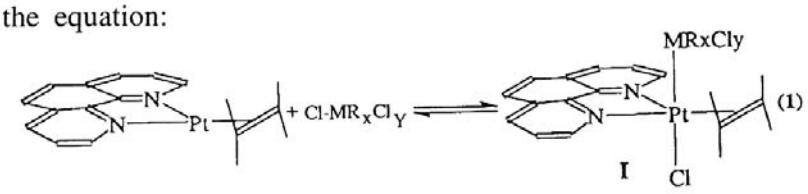
ACHILLE PANUNZI

It is well known that the catalytic properties of transition ions can be enhanced by the presence of a main group metal in their coordination sphere [1].

For example, complexes containing $Pt(II) - E$ bonds $(E = Ge, Sn, Pb)$ catalyze the hydroformylation, isomerization and hydrogenation of unsaturated compounds [1,2]. The intermediates occurring in these processes are tipically five coordinate platinum(II) species containing the metal atom and the olefin in *cis* position. In spite of this, scant examples of stable complexes containing similar coordination environments have been described.

On these grounds and taking into accounts the well-known properties of sterically hindered bidentate ligands, which markedly stabilize trigonal bipyramidal arrangement around d^8 ions [3], we have developed [4] the synthesis of five-coordinate olefin platinum(II) complexes containing an organometal fragment in axial position. The binuclear species have been synthesized through oxidative addition of organometal halides to three-coordinate platinum(0) precursors, according to

the equation:



$M = Ge, Sn, Pb; x + y = 3$

$M = Hg; x = 1, y = 0.$

In addition to the interest for the unusual coordination number, type **I** complexes deserve attention at least in two further respects:

i) in the case of organomercury and organotin halides, reaction (1) is an equilibrium and represents a rare example of reversible oxidative addition process in the chemistry of platinum(0).

ii) the coordinative saturation of platinum atom greatly enhances the stability of organometal fragments, such as $Pt - PbR_2Cl$ and $Pt - HgR$, which commonly undergo fast decomposition processes [5].

REFERENCES

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Dipartimento di Chimica
Università di Napoli "Federico II"
Via Mezzocannone 4, I-80134, Napoli